

STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein

TDEC-DWS 200 East Race St Knoxville, TN 37763 Lab ID: N00005438 Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

Billing Code:

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

N00005438001

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 08:45

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix:

ROANE - 73

EFO: Sampling Agency:

Water Knoxville

Billing Code:

TDEC-DWS 327.39-12 TDEC-DWS

Send Report To: Agency Invoiced:

TDEC-DWS

Priority Date:

Date/Time Received:

12/07/2009 11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Digestion Metals	MET					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/08/2009				M Pattanayek	12/8/2009

TEST: ICP-MS	ME	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/8/2009
Barium	23	μg/L	2.5	5	M Pattanayek	12/8/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/8/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/8/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/8/2009
Cobalt	0.20J	μg/L	0.04	1	M Pattanayek	12/8/2009
Lead	0.35J	μg/L	0.10	1	M Pattanayek	12/8/2009
Manganese	46	μg/L	0.42	1	M Pattanayek	12/8/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/8/2009
Thallium	0.27J	μg/L	0.03	1	M Pattanayek	12/8/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/8/2009

TEST: Mercury	MET					
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Wilson	12/8/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438002

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 08:50

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-DWS

Send Report To: Agency Invoiced:

327.39-12 TDEC-DWS **TDEC-DWS**

Priority Date:

Date/Time Received: 12/07/2009

11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals ANALYTE	MET					
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/08/2009				M Pattanayek	12/8/2009

TEST: ICP-MS	MET	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/8/2009
Barium	26	μg/L	2.5	5	M Pattanayek	12/8/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/8/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/8/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/8/2009
Cobalt	0.11J	μg/L	0.04	1	M Pattanayek	12/8/2009
Lead	0.15J	μg/L	0.10	1	M Pattanayek	12/8/2009
Manganese	9.5	μg/L	0.42	1	M Pattanayek	12/8/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/8/2009
Thallium	0.16J	μg/L	0.03	1	M Pattanayek	12/8/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/8/2009

TEST: Mercury	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Wilson	12/8/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438003

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: RAW

Project Site No.: Station No.:

Date/Time Collected:

12/07/2009 09:40

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-DWS

Billing Code: Send Report To: 327.39-12 **TDEC-DWS**

Agency Invoiced: **Priority Date:**

TDEC-DWS

Date/Time Received:

12/07/2009 11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals ANALYTE	MET					
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/08/2009	•			M Pattanayek	12/8/2009

TEST: ICP-MS	ME	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/8/2009
Barium	19	μg/L	2.5	5	M Pattanayek	12/8/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/8/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/8/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/8/2009
Cobalt	0.10J	μg/L	0.04	1	M Pattanayek	12/8/2009
Lead	U	μg/L	0.10	1	M Pattanayek	12/8/2009
Manganese	U	μg/L	0.42	1	M Pattanayek	12/8/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/8/2009
Thallium	0.11J	μg/L	0.03	1	M Pattanayek	12/8/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/8/2009

TEST: Mercury	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Wilson	12/8/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438004

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: FINISH

Project Site No.: Station No.:

Date/Time Collected:

12/07/2009 09:45

Sampler's Name: County:

GEOFF KLEIN ROANF - 73

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville TDEC-DWS

Billing Code: Send Report To: Agency Invoiced: 327.39-12 TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

12/07/2009

11:40

Received By:

L Barrociere

Field Determinations

:Hq

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow: CFS

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/08/2009				M Pattanayek	12/8/2009

TEST: ICP-MS	ME ⁻	THOD: EPA 200	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/8/2009
Barium	24	μg/L	2.5	5	M Pattanayek	12/8/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/8/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/8/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/8/2009
Cobalt	0.18J	μg/L	0.04	1	M Pattanayek	12/8/2009
Lead	U	μg/L	0.10	1	M Pattanayek	12/8/2009
Manganese	1.8	μg/L	0.42	1	M Pattanayek	12/8/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/8/2009
Thallium	0.10J	μg/L	0.03	1	M Pattanayek	12/8/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/8/2009

TEST: Mercury	ME ⁻					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Wilson	12/8/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit



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TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein

TDEC-DWS 200 East Race St Knoxville, TN 37763

N00005438 Lab ID: Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

Billing Code:

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

N00005438001

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 08:45

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency:

TDEC-DWS

Billing Code: Send Report To: 327.39-12 TDEC-DWS

Agency Invoiced:

TDEC-DWS

Priority Date:

Date/Time Received:

12/07/2009 11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature:

Dissolved Oxygen:

Other: Flow:

CFS

TEST: Alkalinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	54	mg/L	3.8	10	M Chen	12/8/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	53	mg/L	0.7	1	M Chen	12/7/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438002

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 08:50

Sampler's Name: County:

GEOFF KLEIN ROANE - 73

Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency: **Billing Code:**

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced:

TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

12/07/2009 11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: **Dissolved Oxygen:**

Other: Flow:

CFS

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	54	mg/L	3.8	10	M Chen	12/8/2009	

TEST: Hardness, Calcium	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	51	mg/L	0.7	1	M Chen	12/7/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438003

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: RAW

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 09:40

Sampler's Name:

GEOFF KLEIN

County:

ROANE - 73

Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency:

TDEC-DWS

Billing Code:

327.39-12

Send Report To:
Agency Invoiced:

TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

12/07/2009 11:40

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature:

Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Alkalinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	71	mg/L	3.8	10	M Chen	12/8/2009

TEST: Hardness, Calcium	ME:	THOD: SM 350			:		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Calcium hardness	63	mg/L	0.7	1,	M Chen	12/7/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00005438004

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

12/07/2009 09:45

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: **ROANE - 73**

EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-DWS 327.39-12

Send Report To:

Date/Time Received:

TDEC-DWS **TDEC-DWS**

Agency Invoiced: Priority Date:

12/07/2009 11:40

Received By:

L Barrociere

TEST: Alkalinity, Total METHOD: EPA 310.2 ANALYTE MDL MQL **ANALYZED BY: RESULT** UNITS DATE

Field Determinations

Chlorine, residual:

Dissolved Oxygen:

CFS

Conductivity:

Temperature:

pH:

Other:

Flow:

62 Total Alkalinity mg/L 3.8 10 M Chen 12/8/2009

TEST: Hardness, Calcium METHOD: SM 3500-Ca D **ANALYTE** MDL MQL **RESULT** UNITS **ANALYZED BY:** DATE 64 Calcium hardness mg/L 0.7 1 M Chen 12/7/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit